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From: Towle, Michael
Sent: Sun 8/30/2015 3:21:54 PM
Subject: GKM flow vs. NFCC flow

Got to thinking about our current set up and how it would work during a big rain event.

1. We measure the flow of GKM. Flow measurement from GKM has been variable. We specify treatment chemical dosage based upon that amount (e.g., 600 gpm).
2. We add treatment chemicals to a combined GKM and NFCC flow. We have not yet measured the flow into/out of the treatment system (e.g., roll off box where we now add lime). The combined GKM/NFCC flow is likely higher than 600 gpm although it is also likely to be mostly comprised of GKM flow. The NFCC-specific flow would be highly and quickly subject to variation during rain events.
3. The RnB pond can barely keep up with our current treatment regime largely due to flow rate. It probably will not respond favorably to a huge flow increase we send over due to a rain event. Right now ERRS tries to maintain a specific level in the treatment box and will send an increased GKM/NFCC flow to the RnB pond to avoid spillover from the treatment area. This will likely cause an upset in the RnB pond.

Before we completely capture the GKM flow in pipe, and to avoid the potential that we send an excess flow to the RnB pond which could cause an upset, we should consider either:

- A. Devising a plan to allow for an increased GKM/NFCC flow to bypass treatment altogether (to avoid an RnB pond upset). This would involve construction of a bypass upstream of treatment to allow heavy rain flow (really just flow in excess of 600 gpm) to bypass. Arguably, we are allowing a portion of GKM flow to go untreated as it did before August of this year. This is tricky since it involves stream work upstream of treatment.
- B. Devise a plan for ERRS to **not** increase the pump rate to the RnB pond in response to a rain event. The excess GKM/NFCC lime-treated flow could be:

1. allowed to spill over the treatment area spillway directly back to NFCC.
2. Pumped through the emergency pond system (which we will be trying to dry).

C. Continue as we are and work diligently to capture the GKM flow in a pipe and improve the settling in the RnB pond. Settling improvements involving baffles and perhaps increased capacity until we capture and separate the GKM and NFCC flow.

Minimally and regardless, we should try and find out what our flow into the treatment box really is. We should ask ERRS (Rain for Rent) for a flow meter in line with the pump system and ask START to try and determine that flow in advance of such a flow meter.